

Solutions for Demanding Applications



VARTECH
SYSTEMS INC.

Industrial CRT and Flat Panel Displays



VT460X2

Large Screen Outdoor LCD

User's Guide

Read these instructions completely before attempting to operate your new Color Display

USER MANUAL

Safety Instructions

WARNING / CAUTION

Failure to follow directions noted by this symbol could result in bodily harm or damage to equipment.

Notational Conventions



Prohibited



Do not disassemble



Do not touch



Important to read and understand at all times



Disconnect the plug from the outlet



Grounding to prevent an electric shock

Please read the following safety instructions as they are designed to prevent damage to property and harm to the user.

1. **Do not use a damaged or loose plug.** This may cause an electric shock or fire.
 2. **Do not pull the plug out by the wire nor touch the plug with wet hands.** This may cause an electric shock or fire.
 3. **Use only a properly grounded plug and receptacle.**
An improper ground may cause electric shock or equipment damage.
 4. **Insert the power plug firmly so that it does not come loose.**
A bad connection may cause fire.
 5. **Do not excessively bend the plug and wire nor place heavy objects upon them, which could cause damage.**
This may cause an electric shock or fire.
 6. **Do not connect too many extension cords or plugs to an outlet.**
This may cause fire.
 7. **Do not disconnect the power cord while using the monitor.**
A surge may be caused by the separation and may damage the monitor.
-



Installation

Be sure to contact an authorized Service Center, when installing your monitor in a location with the heavy dust, high or low temperatures, high humidity, chemical substance and where it operates for 24 hours such as the airport, the train station or etc.

Failure to do so may cause a serious damage to your monitor.

1. **Do not drop the monitor when moving it.** This may cause damage to the product or human body.
2. **Do not place the product on an unstable or small surface area.** Place the product on an even, stable surface, as the product may fall
3. **Keep any flammable objects away from the product.**
4. **Keep any heating devices away from the power cable.** A melted coating may lead to electric shock or fire.
5. **Do not install the product in places with poor ventilation** Any increase in internal temperature may cause fire.
6. **A Wall bracket must be installed by a qualified professional to prevent injury or damage.** Use the wall bracket specified in the manual.
7. **Make sure product is at least 4" / 10cm away from the wall for ventilation purposes.** Poor ventilation may raise the internal temperature resulting in shorter life span or degradation of performance.

Clean

1. **If the connector between the plug and the pin is dusty or dirty, clean it properly with a dry cloth.** A dirty connector may cause an electric shock or fire.
2. **Make sure to unplug the power cord before cleaning the product.** Otherwise, this may cause electric shock or fire.
3. **Unplug the power cord from the outlet and wipe the product using a soft dry cloth.** Do not use any chemicals such as wax, benzene, alcohol, thinners, insecticide, air freshener, lubricant or detergent.
4. **Contact the [Service Center](#) or Customer Center for interior cleaning once a year.**
ZKeep the product's interior clean. Dust which has accumulated in the interior over an extended period of time may cause malfunction or fire.



General

1. **Do not remove cover (or back).** This may cause an electric shock or fire. Refer servicing to qualified service personnel.
2. **If your monitor does not operate normally - in particular, if there are any unusual sounds or smells coming from it - unplug it immediately and [contact an authorized dealer or service](#).** This may cause an electric shock or fire.
3. **Use the recommended detergent with a smooth cloth.**

Input

Available Mode : PC / BNC / DVI **A**: **AV** **S** : S-Video : Component : MagicNet

	Description	Play
Source List	Use to select PC, BNC or other external input sources connected to the Monitor. Use to select the screen of your choice. - The direct button on the remote control is 'SOURCE' button. The PIP turns off when the monitor is switched to an external source.	
	1) PC 2) BNC 3) DVI 4) AV 5) S-Video 6) Component 7) MagicNet	
PIP	When external A/V devices such as VCRs or DVDs are connected to the monitor, PIP allows you to watch video from those devices in a small window super-imposed on the PC Video signal. (Off/On) More than one PIP couldn't be overlapped on screen as BNC and the component use the same terminal 1) PIP - The direct button on the remote control is 'PIP' button. Off On : Turn the PIP Screen on or off. 2) Source - The direct button on the remote control is 'SOURCE' button. PC / DVI : AV / S-Video / Component Mode BNC : AV / S-Video Mode AV / S-Video : PC / BNC / DVI Mode Component : PC / DVI Mode : Select the input source for the PIP. 3) Swap - The direct button on the remote control is 'SWAP' button. : Swapping the contents of the PIP and main image. The image in the PIP window will appear on the main screen, and the main screen image will appear in the PIP window. 4) Size - The direct button on the remote control is 'SIZE' button. : Change the Size of the PIP window. 5) Position : Change the Position of the PIP window. 6) Transparency High Medium / Low / Opaque : Adjust the Transparency of PIP windows. Available Mode : PIP	

Picture

PC / BNC /DVI Mode



Available Mode : PC / BNC / DVI AV S : S-Video : Component M : MagicNet

OSD	Description	Play
MagicBright™	MagicBright™ is a new feature providing the optimum viewing environment depending on the contents of the image you are watching. Currently four different modes are available: Entertain, Internet, Text and Custom. Each mode has its own pre-configured brightness value. You can easily select one of four settings by simply pressing the MagicBright™ control button. - The direct button on the remote control is 'M/B' button. 1) Entertain : High brightness For watching motion pictures such as a DVD or VCD. 2) Internet : Medium brightness For working with a mixture of images such as text and graphics. 3) Text : Normal brightness For documentations or works involving heavy text. 4) Custom Although the values are carefully chosen by our engineers, the pre-configured values may not be comfortable to your eyes depending on your taste. If this is the case, adjust the brightness and contrast by using the OSD menu.	
Custom	You can use the on-screen menus to change the contrast and brightness according to personal preference. 1) Contrast : Adjust the Contrast. 2) Brightness : Adjust the Brightness.	
If you adjust picture using Custom function, MagicBright will turn to Custom mode.		
Color Tone	The tone of the color can be changed. 1) Cool 2) Normal 3) Warm	

	4) Custom	
Color Control	Adjust the individual R, G, B color controls. 1) Red 2) Green 3) Blue	
If you adjust picture using Color Control function, Color Tone will turn to Custom mode.		
Image Lock	Image Lock is used to fine-tune and get the best image by removing noise that creates unstable images with jitter and shimmer. If satisfactory results are not obtained using the Fine adjustment, use the Coarse adjustment and then use Fine again. 1) Coarse : Removes noise such as vertical stripes. Coarse adjustment may move the screen image area. You may relocate it to the center using the horizontal control menu. 2) Fine : Removes noise such as horizontal stripes. If the noise persists even after fine tuning, repeat it after adjusting the frequency (clock speed). 3) Position : Adjusts the screen location horizontally and vertically.	1) Coarse / Fine 3) Position
Auto Adjustment	The values of Fine, Coarse, position are adjusted automatically. If you change resolution in the control panel, auto function will be executed. - The direct button on the remote control is 'AUTO' button.	
Signal Balance	Used to make up for the weak RGB signal which has been transmitted by a long signal cable. 1) Signal Balance You can select with the signal control either On or Off. 2) Signal Control You can adjust the R Phase, G Phase, B Phase, Gain and Sharpness manually.	1) Signal Balance 2) Signal Control
Size	You can switch the Size. 1) 16:9 2) 4:3	
PIP Picture	You can adjust the PIP Screen Settings. 1) Contrast : Adjusts the Contrast of the PIP window on the screen. 2) Brightness : Adjusts the Brightness of the PIP window on the screen. 3) Sharpness : Adjusts the difference between the lightest and darkest areas of the PIP window. 4) Color : Adjusts the Color of the PIP window on the screen. 5) Tint : Adds a natural tone to the PIP window. Available Mode : PIP	

 **AV / S-Video / Component Mode**



Available Mode : PC / BNC / DVI : **AV** : S-Video : Component : MagicNet

OSD	Description	Play
Mode	The Monitor has four automatic picture settings ("Dynamic", "Standard", "Movie" and "Custom") that are preset at the factory. You can activate either Dynamic, Standard, Movie, or Custom. You can select "Custom" which automatically recalls your personalized picture settings. - The direct button on the remote control is 'P.MODE' button. 1) Dynamic 2) Standard 3) Movie 4) Custom	
Custom	You can use the on-screen menus to change the contrast and brightness according to personal preference. 1) Contrast : Adjusts the Contrast. 2) Brightness : Adjusts the Brightness. 3) Sharpness : Adjust the picture sharpness. 4) Color : Adjust the picture color. 5) Tint (Available in AV/S-Video Mode Only) : Adds a natural tone to the display.	
Color Tone	The tone of the color can be changed. The individual color components are also user adjustable. 1) Cool2 2) Cool1 3) Normal 4) Warm1 5) Warm2	
Size	You can switch the Size. 1) 16:9 2) Panorama 3) Zoom 1 4) Zoom 2 5) 4:3 - ZOOM1, ZOOM2, Panorama are not available in 1080i(or over 720p) of DTV.	
Digital NR	- Digital Noise Reduction. You can turn the Noise Elimination feature Off/On. The Digital Noise Elimination feature allows you to enjoy clearer and crisper images. OFF / ON	

Film Mode	You can turn Film Mode Off/On. The Film Mode feature offers you a theater-quality viewing experience.	
	Off	
	On	
DNle Demo	- Digital Natural Image engine Samsung's new technology brings you more detailed images with contrast and white enhancement and 3D noise reduction. A New image compensation algorithm gives brighter, clearer images to our customers. DNle technology will match every signal to your eyes.	
	You can compare a screen with DNle to that without DNle. The left half will show an image with DNle while the right half will display the image without DNle. This monitor supports the DNle feature by default.	
	Off : Switches off the DNle Demo mode. On : Switches on the DNle Demo mode.	
PIP Picture	You can adjust the PIP Screen Settings. 1) Contrast : Adjusts the Contrast of the PIP window on the screen. 2) Brightness	

Setup



Available Mode : PC / BNC / DVI : AV : S-Video : Component : MagicNet

OSD	Description	Play
Time	Use to choose one of 4 time settings, Clock Set, Sleep Timer, On Timer, and Off Timer. 1) Clock Set : Current Time Setting. 2) Sleep Timer : Use to set the Monitor to turn off automatically in certain minutes. (Off, 30, 60, 90, 120, 150, 180) 3) On Timer : Use to set the Monitor to turn on automatically at a preset time. Use to control the mode, volume level at the time the monitor turns on automatically. 4) Off Timer : Use to set the monitor to turn off automatically at a preset time. When you select turning Yes the On Timer or Off Timer when Clock Set is undefined, a guiding "Set the first.".	1) Clock Set 2) Sleep Timer 3) On Timer 4) Off Timer
	message pops up: clock	
Lamp Control	Used to adjust inverter lamp in order to reduce energy consumption.	
Language	You can choose one of 11 languages.	
	The language chosen affects only the language of the OSD. It has no effect on any software running on the computer.	
Menu Transparency	Changes the opaqueness of the background of the OSD. 1) High 2) Medium 3) Low 4) Opaque	
Safety Lock PIN	You can change the password.	
Reset	Picture parameters are replaced with the factory default values. 1) Image Reset 2) Color Reset	1) Image Reset 2) Color Reset

Video Wall	A Video Wall is a set of video screens that are connected together, so that each screen shows a part of the whole picture or so that the same picture is repeated on each screen. 1) Video Wall : Turns Off/On the Video Wall function of the selected display. Off On 2) Format : The format can be selected to see a divided screen. Full Provides a full screen without any margins. Natural Displays a natural image with the original aspect ratio intact. 3) Screen Divider : The screen can be divided into. You can select a number of screens with a different layout when dividing. z Select a mode from Screen Divider. z Select a display from Display Selection. z The place will be set up by pressing a number in the selected mode. 2*2 3*3 4*4 1*5 5*1 When Video Wall is running, the PIP, Auto Adjustment, Image Lock, and Size functions are not available. Launching Video Wall while PIP is running, will switch PIP Off. Video Wall does not operate in MagicNet mode.	1) Video Wall 2) Format 3) Screen Divider
Resolution Select	When the picture is not displayed properly on the screen when setting the graphics card resolution of the computer to 1024 x 768 @ 60Hz, 1280 x 768 @ 60Hz, 1360 x 768 @ 60Hz or 1366 x 768 @ 60Hz, by using this function(Resolution Select) you can have the picture displayed on the screen in the specified resolution. Off 1024 X 768 1280 X 768 1360 X 768 1366 X 768 Selecting the menu is only allowed when the graphics resolution is set to 1024 x 768 @ 60Hz, 1280 x 768 @ 60Hz, 1360 x 768 @ 60Hz, 1366 x 768 @ 60Hz.	
Screen Scroll	The Screen Scroll function is used to prevent afterimages that may appear when a still picture is displayed on the screen over a long time. - The Screen Scroll function scrolls the screen for the specified period of time. - This function is not available when the power is turned off. 1) Auto Scroll : Determines whether to turn the Screen Scroll function On or Off. Off On 2) Interval : Determines the time interval to run the Screen Scroll operation. (1~10 Hours) The time is calculated on the basis of the power on time. By default, the time is set to 10 hours. 1~10 Hours	1) Auto Scroll 2) Interval 3) Second

3) Second

: Determines the time period to run the Screen Scroll operation.
(1~5 Seconds)
By default, the time is set to 5 seconds.

1~5 Seconds



Self-Test Feature Check

Check the following items yourself before calling for service. Contact the [Service Center](#) for problems that you cannot solve by yourself.



[Self-Test Feature Check | Not Optimum Mode | Maintenance and Cleaning | Symptoms & Recommended Actions](#)

1. Self-Test Feature Check

Your monitor provides a self test feature that allows you to check whether your monitor is functioning properly.

1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer.
3. Turn on the monitor.

The figure shown below ("Check Signal Cable") appears on a black background when the monitor is in its normal working condition though it does not sense any video signal: While in the Self-Test mode, the LED power indicator remains green and the figure moves around on the screen.

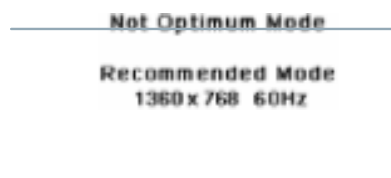


4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; **your monitor is functioning properly.**

2. Not Optimum Mode

You can view the screen even in more than 1360x768 resolution. However you will have the following message for a minute; You can choose to change the screen resolution or stay in the current mode during that time. And if the resolution is more than 85Hz, you will see the black screen because the monitor does not support over 85Hz.





Refer to Specifications > [Preset Timing Modes](#) for the resolutions or frequencies that are supported by the monitor.

3. Maintenance and Cleaning

1. Maintaining the Monitor Case. Clean with a soft cloth after disconnecting the power cord.



- Do not use benzene, thinner or other flammable substances, or a wet cloth.
- We recommend a Samsung cleansing agent is used to prevent damage to the screen.

2.

2. Maintaining the Flat Panel Display Screen. Clean with a



soft cloth
(cotton
flannel)
smoothly.

- Never use acetone, benzene or thinner.
(They may cause flaws or deformation of the screen surface.)
- The user will be required to pay costs and related expenses for repair of damages caused by him/her.



4. Symptoms and Recommended Actions

A monitor recreates visual signals received from the computer. Therefore, if there is trouble with the computer or the video card, this can cause the monitor to become blank, have poor coloring, noise, Video mode not supported, etc. In this case, first check the source of the problem, and then contact a

[Service Center or your dealer.](#)

1. Check if the power cord and the video cables are properly connected to the computer.
2. Check if the computer beeps more than 3 times when booting.
(If it does, request an after-service for the main board of the computer.)
3. If you installed a new video card or if you assembled the PC, check if you installed the adapter(video) driver and the monitor driver.
4. Check if the scanning ratio of the video screen is set at 50Hz or 85Hz.
(Do not exceed 60Hz when using the maximum resolution.)
5. If you have problems in installing the adapter (video) driver, boot the computer in Safe Mode, remove the Display Adapter at the "**Control Panel, System, Device Administrator**" and then reboot the computer to reinstall the adapter (video) driver.



Check List

The following table lists possible problems and their solutions. Before calling for service, check the information in this section to see if you can remedy any problems yourself. If you do need assistance, please call [the phone number on the Information section or contact your dealer.](#)

[Problems related to Installation](#) | [Problems related to Screen](#) | [Problems related to Audio](#) | [Problems related to](#)

1. Problems related to Installation

Problems related to the monitor installation and their solutions are listed.



Remote Control

Problems	Solutions
The monitor screen flickers.	• Check if the signal cable between the computer and the monitor is securely connected and tightened. (Refer to Connecting to a Computer)

2. Problems related to Screen

Problems	Solutions
Screen is blank and power indicator is off	Ensure that the power cord is firmly connected and the LCD monitor is on. (Refer to the Connecting the Monitor)
"Check Signal Cable" message	- Ensure that the signal cable is firmly connected to the PC or video sources. (Refer to the Connecting the Monitor) - Ensure that the PC or video sources are turned on
"Not Optimum Mode " message	- Check the maximum resolution and the frequency of the video adapter. - Compare these values with the data in the Preset Timing Modes Chart
Picture rolls vertically.	Check if the signal cable is securely connected. Connect it again securely. (Refer to Connecting to a Computer)
Image is not clear. Picture is blurred.	- Run Frequency Coarse and Fine tuning. - Turn on again after removing all accessories (video extension cable, etc.) - Set resolution and frequency to the recommended ranges
Picture image is unstable and vibrates.	Check if the resolution and frequency set for the computer video card falls in the range supported by the monitor. If not, reset them referring to the current Information under the monitor menu and Preset Timing Modes.
Ghost images are shown in the picture.	
The image is too light or too dark	adjust the brightness and contrast. (Refer to the Brightness, Contrast)
Screen color is inconsistent.	Adjust color using Custom under OSD Color Adjustment menu.
Color image is distorted with dark shadows.	
White color is poor.	
Power Indicator blinks green.	The monitor is currently saving the changes made in settings to the OSD memory.
Screen is blank and power indicator light is steady green or blinks every 0.5 or 1 seconds	- The monitor is using its power management system. - Press a key on the keyboard.
The screen is blank and is blinking.	If you see the "TEST GOOD" message on the screen when you press the MENU button, check the cable connection between the monitor and the computer to ensure that the connector is properly connected

Q & A

Question	Answer
How can I change the frequency?	Frequency can be changed by reconfiguring the video card. Note that video card support can vary, depending on the version of the driver used. (Refer to the computer or the video card manual for details.)
How can I adjust the resolution?	• Windows XP : Set the resolution at the Control Panel~Appearance and Themes~Display~Settings. • Windows ME/2000 : Set the resolution at the Control Panel~Display~Settings. * Contact the video card manufacturer for details.
How can I set the Power Saving function?	• Windows XP : Set the resolution at the Control Panel~Appearance and Themes~Display~Screen Saver . Set the function at BIOS-SETUP of the computer. (Refer to Windows/Computer Manual). • Windows ME/2000 : Set the resolution at the Control Panel~Display~Screen Saver. Set the function at BIOS-SETUP of the computer. (Refer to Windows/Computer Manual).
How can I clean the outer case/LCD Panel?	Disconnect the power cord and then clean the monitor with a soft cloth, using either a cleaning solution or plain water. Do not leave any remains of the detergent nor scratch the case. Do not allow any water to go inside the monitor.

Specifications



General	
General	
 Model Name	VT460X2
LCD Panel	
Size	46 " Diagonal (117 cm)
Display area	1018.353 mm (H) x 572.544 mm (V)
Pixel Pitch	0.7455 mm (H) x 0.7455 mm (V)
Type	a-si TFT active matrix
Synchronization	
Horizontal	30 ~ 70 kHz
Vertical	50 ~ 85 Hz
Display Color	
16.7 M Colors Colors	
Resolution	
Optimum resolution	1360 x 768 / 1366 x 768 @ 60 Hz depends on graphics card used
Maximum resolution	1360 x 768 @ 60 Hz
Input Signal, Terminated	
RGB Analog ,. 0.7 Vp-p ±5%, Positive bright, 75 ~ ±10 %(Terminated), Separate H/V sync, TTL level, positive or negative	
Maximum Pixel Clock	
100 MHz(Analog, Digital)	
Power Supply	
AC 100 ~ 240 VAC(+/- 10 %), 60/50 Hz ± 3 Hz	
Pin out: 1: Phase 2: NC 3: Neutral. Earth: Earth	
Signal Cable	
15pin-to-15pin D-sub cable, detachable, 1.8 m DVI-D to DVI-D connector, detachable, 2.0 m	
Signal Connectors	
D-sub,	

Power Consumption

Less than 310 W

Power Saving

Less than 5 W

Dimensions (WxHxD)/ Weight

1.102 X 658 X 126.5 mm / 43.4 X 25.9 X 5.0 inch / 28 kg

1.102 X 715 X 293 mm / 43.4 X 28.1 X 11.5 inch (With Stand) - Option / 30 kg

1.312 X 715 X 293 mm / 51.7 X 28.1 X 11.5 inch (With Speaker, With Stand) - Option / 33 kg

VESA Mounting Interface

200 mm x 200 mm (for use with Specialty(Arm) Mounting hardware.)

Environmental considerations

Operating	Temperature: 50°F ~ 104°F (10°C ~ 40°C) Humidity: 10 % ~ 80 %, non-condensing
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Storage	Temperature: -4°F ~113°F (-20°C ~ 45°C) Humidity: 5 % ~ 95 %, non-condensing
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Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. Interaction of the monitor and computer systems will provide the best operating conditions and monitor settings. In most cases, monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Dot Acceptable

TFT LCD panel manufactured by using advanced semiconductor technology with precision of 1 ppm(one millionth) above is used for this product. But the pixels of RED, GREEN, BLUE and WHITE color seem to be bright sometimes or some of black pixels could be seen. This is not from bad quality and you can use it without uneasiness.

For example, the number of TFT LCD sub pixels that is contained in this product are 3,133,440.

Design and specifications are subject to change without prior notice.

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor into a low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPMS compliant video card installed in your computer. Use a software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power Switch)	Power off
				(Mechanical Power S/W)
Power Indicator	Green	Green, Blinking	Black	Black
Power Consumption	Less than 310 W	Less than 5 W	Less than 1 W	
		(Off-mode)	(at 120 Vac)	Less than 0 W

Option : SPEAKER L/R(8~, 10 W), USB Device(Max, 5 W is allowed)

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjust the screen as follows.

Table 1. Preset Timing Modes

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	49.500	+/+
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	43.269	85.008	36.000	-/-
VESA, 800 x 600	35.156	56.250	36.000	+, -/+, -
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 800 x 600	53.674	85.000	56.250	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1024 x 768	68.677	85.997	94.500	+/+
VESA, 1280 x 768	47.776	60.000	79.500	-/+
VESA, 1360 x 768	47.712	60.000	85.500	+/+

Sync Signal

Sync (Synchronized) Signals refer to the standard signals that are required to display desired colors on the monitor. They are divided into Vertical and Horizontal Sync Signals. These signals display normal color images by the set resolution and frequency.

Types of Sync Signals

Separate	This is a scheme of transmitting individual vertical sync signals to the monitor.
Composite	This is a scheme of combining vertical sync signals into one composite signal and transmitting it to the monitor. The monitor displays the color signals by separating the composite signal into original color signals.

Dot Pitch

The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm

Vertical Frequency

The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called Vertical Frequency or Refresh Rate. Unit: Hz

Example: If the same light repeats itself 60 times per second, this is regarded as 60 Hz.

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: kHz

Interlace and Non-Interlace Methods

Showing the horizontal lines of the screen from the top to the bottom in order is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as that used in TVs.

Plug & Play

This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.

Resolution

The number of horizontal and vertical dots used to compose the screen image is called 'resolution'. This number shows the accuracy of the display. High resolution is good for performing multiple tasks as more image information can be shown on the screen.

Example: If the resolution is 1360 X 768 , this means the screen is composed of 1360 horizontal dots (horizontal resolution) and 768 vertical lines (vertical resolution).

Multiple Display Control (MDC)

A Multiple Display Control (MDC) is an application allowing various displays to be easily and simultaneously operated on a PC. RS-232C, a standard of serial communication, is used for the communication between a PC and a display.



For Better Display

1. Adjust computer resolution and screen injection rate (refresh rate) on computer as described below to enjoy the best quality of picture. You can have an uneven quality of picture in the screen if the best quality of picture is not provided in TFT-LCD.

{ Resolution: 1360 x 768
{ Vertical frequency (refresh rate): 60 Hz

2. TFT LCD panel manufactured by using advanced semiconductor technology with precision of 1 ppm (one millionth) above is used for this product. But the pixels of RED, GREEN, BLUE and WHITE color seem to be bright sometimes or some of black pixels could be seen. This is not from bad quality and you can use it without uneasiness.

{ For example, the number of TFT LCD sub pixels that is contained in this product are 3,133,440

3. When you clean the monitor and the panel outside, please apply the recommended small amount of cleaner by using soft and dry cloth and polish it. Let LCD area not to be forced but to be scrubbed out softly.
If excessive force is applied, you can have a stain on it.
4. If you are not satisfied with the quality of picture, you can get better quality of picture by executing "auto adjustment function" in display screen that is appeared as window termination button is pressed.
If there's still noise after automatic adjustment, use FINE/COARSE adjustment function.
5. If you view a fixed screen for an extended period of time, residual image or blurriness may appear. Change the mode to energy save or set a screensaver to moving picture when you need to be away from the monitor for an extended period of time.



Correct Disposal of This Product (Waste Electrical & Electronic Equipment) - Europe only



(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.